# "STAYBRITE" STEEL IN ARCHITECTURE

# CONTENTS

FIRTH VICKERS STAINLESS STEELS LTD

# FOREWORD

Ten years ago, the corrosion-resisting miracle of "Firth Stainless" and "Staybrite" steels was a matter of doubt and ever acrimonious dispute amongst some of our most industrious designers and fabricators of metal-work and machinery.

To-day, the name "Staybrite" Stainless steel has become what is commonly described in our language as a household word meaning, in this instance, a material that satisfies almost every industrial test and purpose of scientific, mechanical, and domestic application of steel.

This prodigious infant of metallurgical research already and universally known as "Staybrite" steel has proved once more that dreams of scientific investigation are hardly ever so incredible as when they come true.

The indisputable corrosion-resisting properties and superb aesthetic values of "Staybrite" steel are, one way or another, manifest in every community and household throughout the British Empire, and on the high seas as well.

The finest shops, the latest restaurants, the most popular cafés, the dome of St. Paul's Cathedral, that floating segment of a great Empire, triumph of marine engineering—R.M.S. *Queen Mary*, dockyard and railway, automobile and aeroplane, hospital and sanatorium, luxurious hotels and humble kitchens, workshops and places of amusement, all these things demonstrate the indestructible adaptability of "Staybrite" steel in some form of mechanical, constructional, industrial or artistic achievement.

y OLIVER P. BERNARD
L.R.I.B.A.

As a result of so much visible utility throughout such enormous territory of human activity, there is little left to add to the record of what has become a universal material. This brochure, therefore, is merely a supplement or illustrative record of recent developments and fresh purposes to which "Staybrite" steel has been lately applied.

It would be unfortunate if the intention of this brochure were mistaken for that of "eat more," "drink more," "use more" methods of publicity upon which some commodities appear to rely. Nothing so ambitious or precarious exists in this case, but the information herein will certainly misfire if it conveys no impulse to those who are interested in problems of application of non-corrosive steels, particularly architects and designers of buildings and their necessary equipment.

Perhaps, in time, it is not inconceivable that the virtues of "Staybrite" steel may need no more acclaim than other and more common necessities of life. It may be so discovered that no amount of publicity will ever prevent people from eating bread and butter—nor discourage them from using Firth-Vickers "Staybrite" steels.

"STAYBRITE" steel is undoubtedly one of the most valuable discoveries of this age.

# "STAYBRITE" STEEL

Almost every profession and every industry is making use of its wonderful properties in one form or another. From two-thousand gallon milk tanks to surgical appliances, from nitric acid plant to sinks, "Staybrite" steel is the answer to hundreds of problems concerning corrosion in all its forms.

The architect was one of the first to realize the valuable properties of "Staybrite" steel, its decorative appeal, strength, durability under severe usage, its cleanliness, and its hygienic properties.

How well this noble steel lends itself to the interpretation of the architects' ideas in the hands of the skilled fabricator is apparent even from the few examples illustrated in this brochure.

"Staybrite" steel is solidly stainless throughout. It is a steel in which are alloyed a high percentage of both chromium and nickel ; and it is the alloying of these costly metals with the steel which produces its super-corrosion-resisting properties and remarkable ductility, and permits a polished untarnishable surface to be given to any article made of it.

"Staybrite" steel can be fabricated by all the usual methods. It can be hand-worked, drawn, spun, rolled, pressed, and forged.

"Staybrite" steel lends itself readily to welding by both oxy-acetylene and electric arc methods : it can be soldered and brazed. A weld can be made that when correctly ground and polished cannot be seen, and this is a valuable characteristic when it becomes necessary to weld sections together. The close joint mitre of the old shop-front is now superseded by an invisible weld.

"Staybrite" steel can be given a high polish or a satin finish. It can be hand-hammered, etched, engraved, or engine turned.

The attractive and labour-saving benefits made available by "Staybrite" steel, which the architect is endeavouring to place at the disposal of everyone, are perhaps nowhere so appreciated as when applied to the modern flat with its beautifully polished door-

knob and letter-box, its essentially compact and easy-clean kitchen with sink, sound-deadening draining board, table top, utensils, and even wall linings made from this steel which does not stain or tarnish.

The bathroom with its "Staybrite" steel towel rail and other fittings, satin-finished tiling with perhaps a highly polished surround as contrast. Taps, switch plates, door-knobs and hooks, all to match.

Restaurants, hotels, theatres, exhibitions, stores, works, and hospitals all benefit from the many advantages obtained from the use of "Staybrite" steel. Wherever the reflecting beauty of a polished surface is desired, there "Staybrite" steel is employed. Decorative pillars and strip insertions, light mirrors and fittings, grilles and radiator covers are but a few features for which polished "Staybrite" steel is an ideal material.

Kitchen and cafeteria equipment, store room racks, meat hooks, hangers, and bars for meat refrigerators: sterilizing apparatus perfectly hygienic and cleaned with the greatest of ease and speed, are made from "Staybrite" steel.

Cocktail bars, fish bars and fish ranges, and swimming-pools all base their modern improvements upon this same super-stainless steel.

Canopies, rotating entrance doors, door fittings, kicking plates, and hand-railings are all to be found in "Staybrite" steel, whether for the humble shop-front or for the fine entrance of a pretentious restaurant.

Entrances requiring perhaps enquiry desks, pay-desks, grilles, lift entrances, and even ash-trays, are made attractive by the use of untarnishable "Staybrite" steel.

Some lovely examples of main staircase balustrading are in existence, which after years of wear are as bright and attractive as ever, whilst stair-rods which stand any amount of kicking are giving perfect service.

Door surrounds and skirtings have been carried out in "Staybrite" steel with great success.


Shop Front,
Architects: [illegible]
Craftsmen: [illegible]


HALL CROWN


Shop Front :

Architect : P. J. Beckett F.R.I.B.A.

Designed and executed by :

Messrs. Boots Works Department


OUR THROATS SAKE —
RAVEN A
CARRERAS LTD
CARRERAS LTD



Shop Front
Designed and
E. Pollard & Co

Shop Front
Designed by
Craftsmanship


EASTERNS
EASTERN
SALE
SALE


LATE OF NEW YORK
Furio's
Spaghetti House
OPEN TILL 6 A.M.
RESTAURANT


Shop Front


41
ABC
43


Buenos Aires.
Craftsmen: Fredk. Sign & Co. (S.A.) Ltd.


ALEXANDRE
SPECIALIZED
TAILORING
OPENING OFFER
10%
MARKED PRICES
10
10
10



Shop Front,
Architect [illegible] 1934
Craftsman [illegible]

Shop Front
Architect [illegible] 1938
Craftsman [illegible]


Shop Front

Shop Front

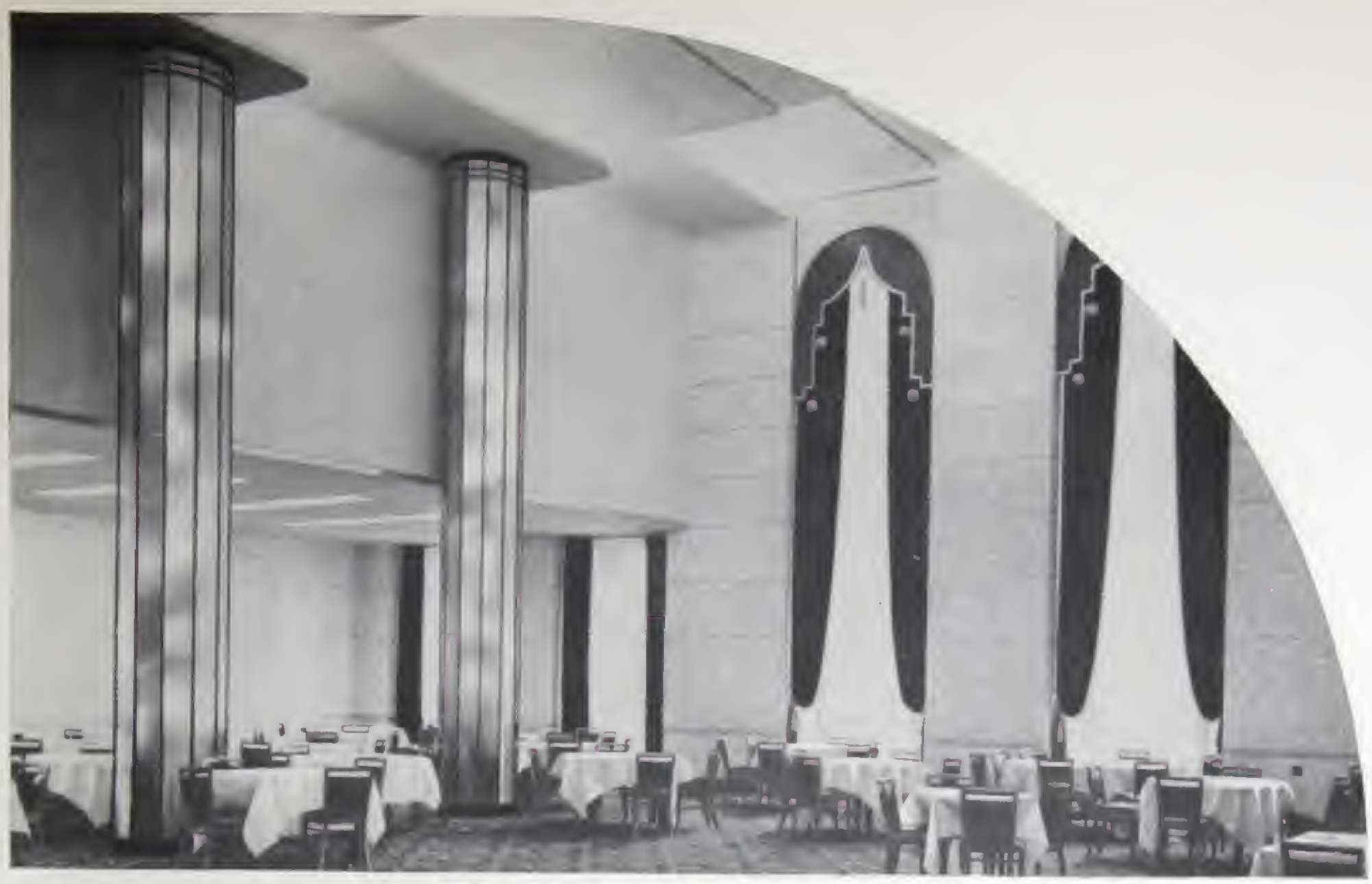

Shop Front,
Architect : H. [illegible]
Craftsmen : [illegible]

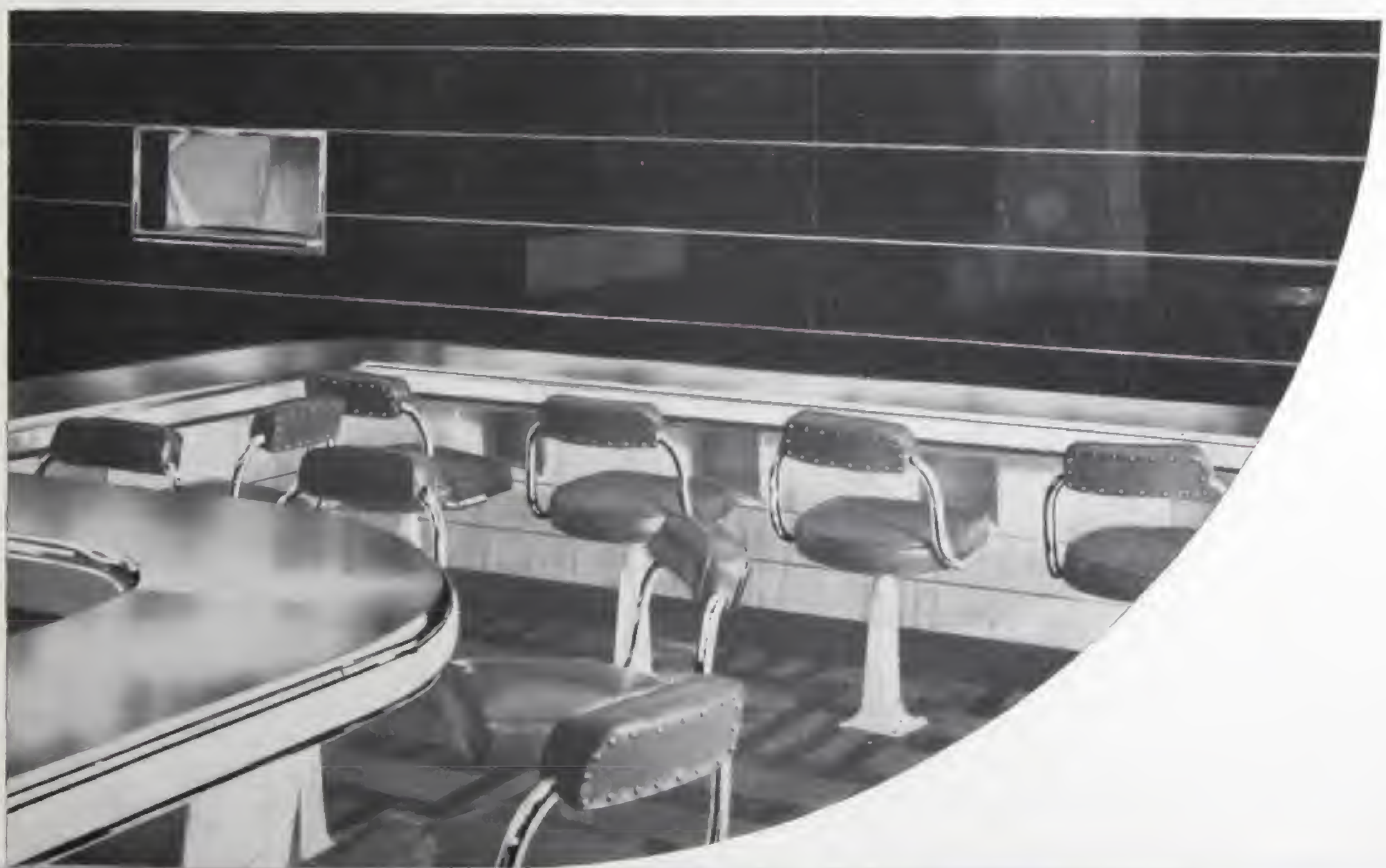

CARR SHOE CO
CHAUSSURES PARISIENNES
CARR SHOES
CARR SHOES


FOLLETTS
PASTRY COOKS
CATERERS
BREAD
HOVIS


213
J. LYONS & Co Ltd
213

Restaurant Entrance at Dunes Center
Oakland, California





Hotel Austria

Architect - Mr. Emil Schi[illegible]

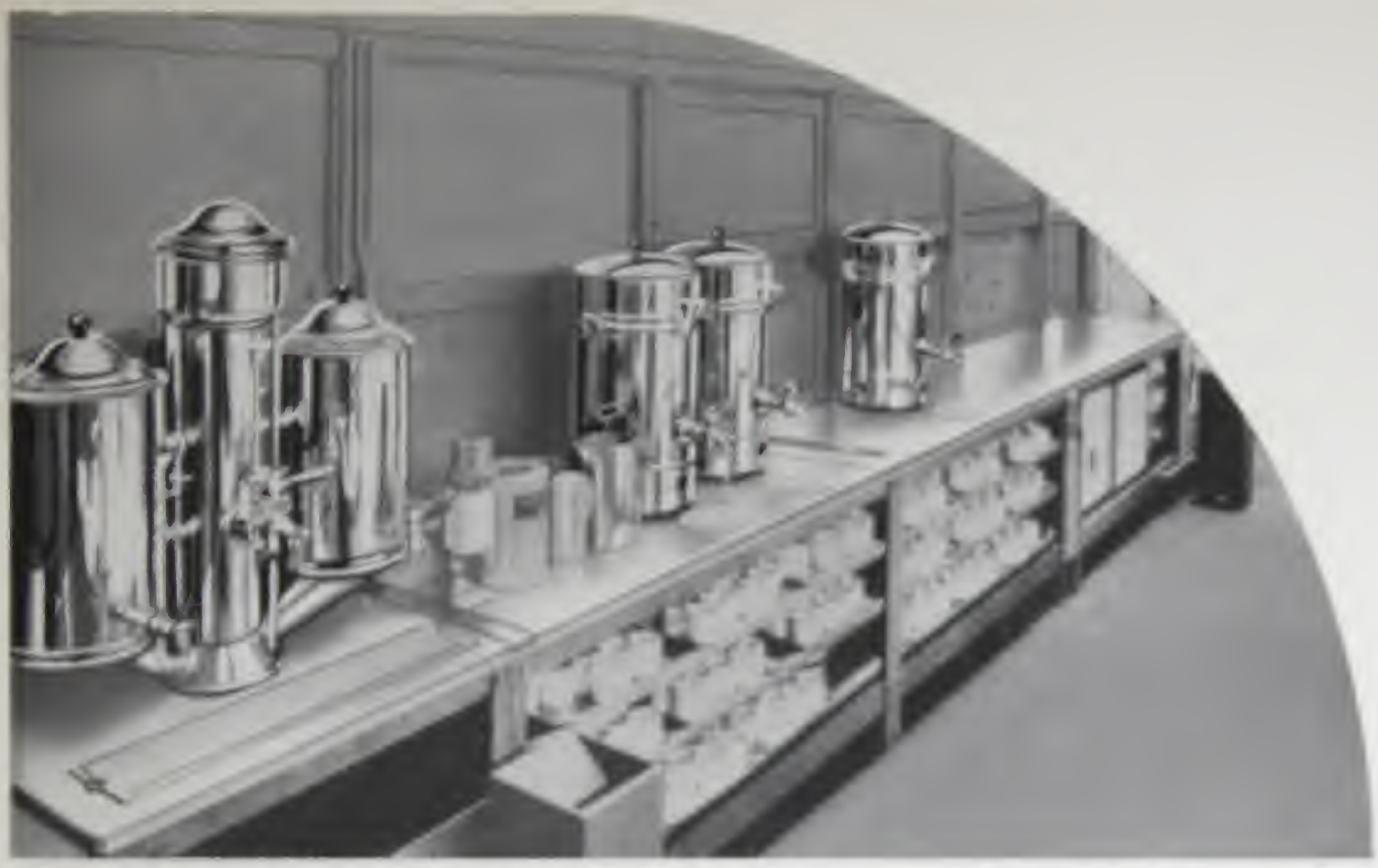
Robertson & Marks, Ass[illegible]

Hotel Austria

Architect - Mr. Emil Schi[illegible]

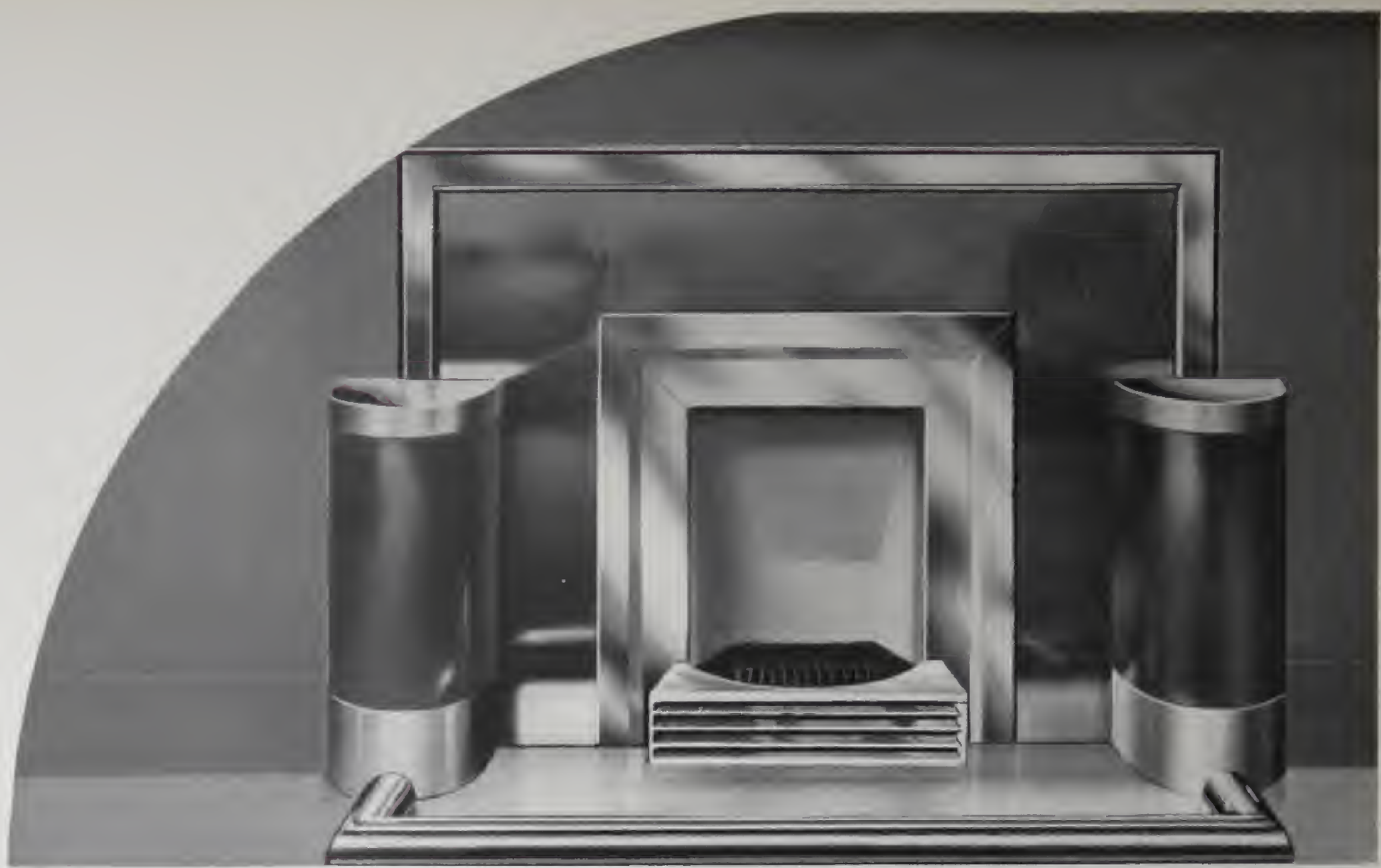
Robertson & Marks, Ass[illegible]

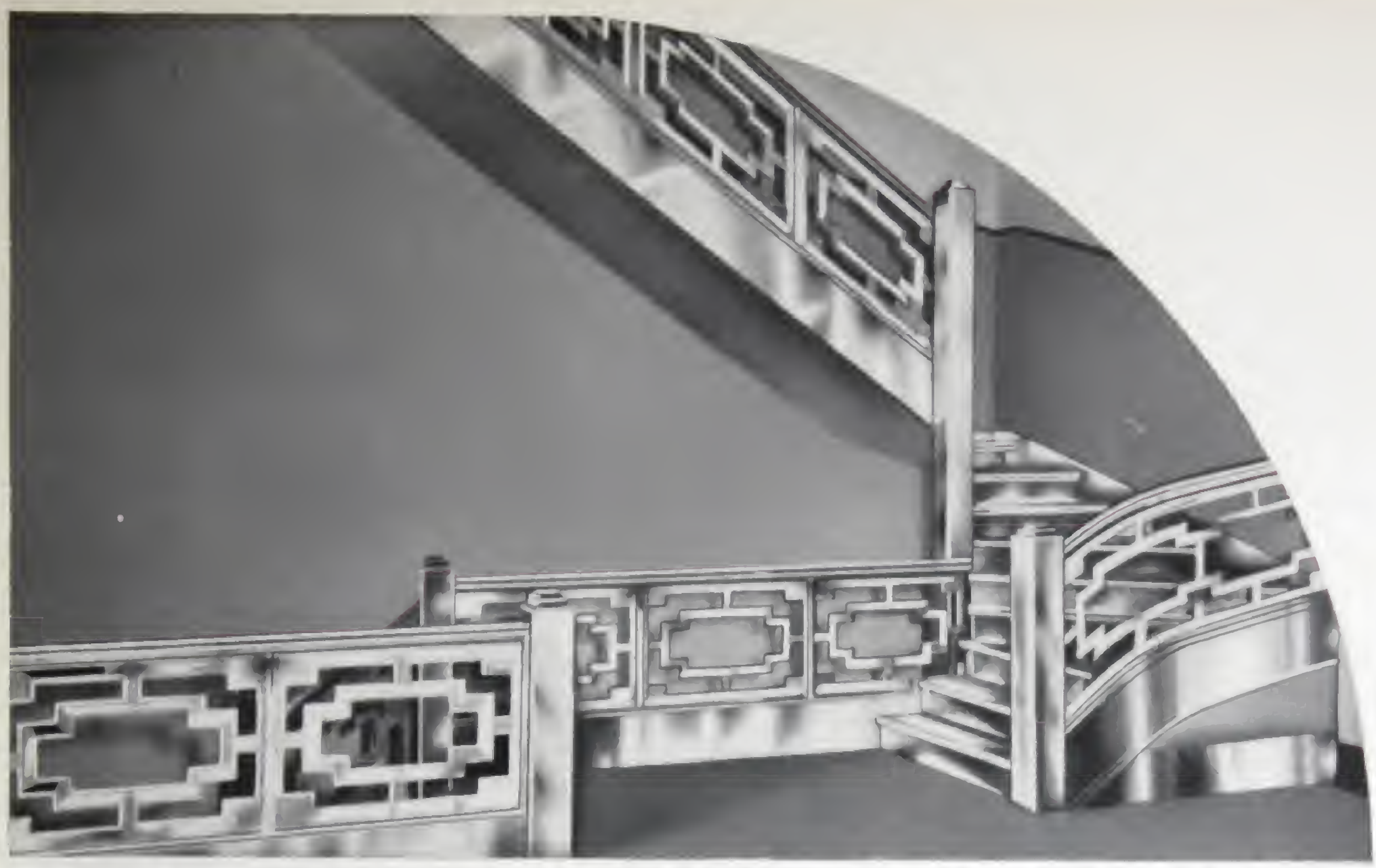
Verandah Grill, QSTS "Queen
Craftsman/Power Wood [illegible]



London
LRIBA
Lanham & Sons Ltd.

Corner of



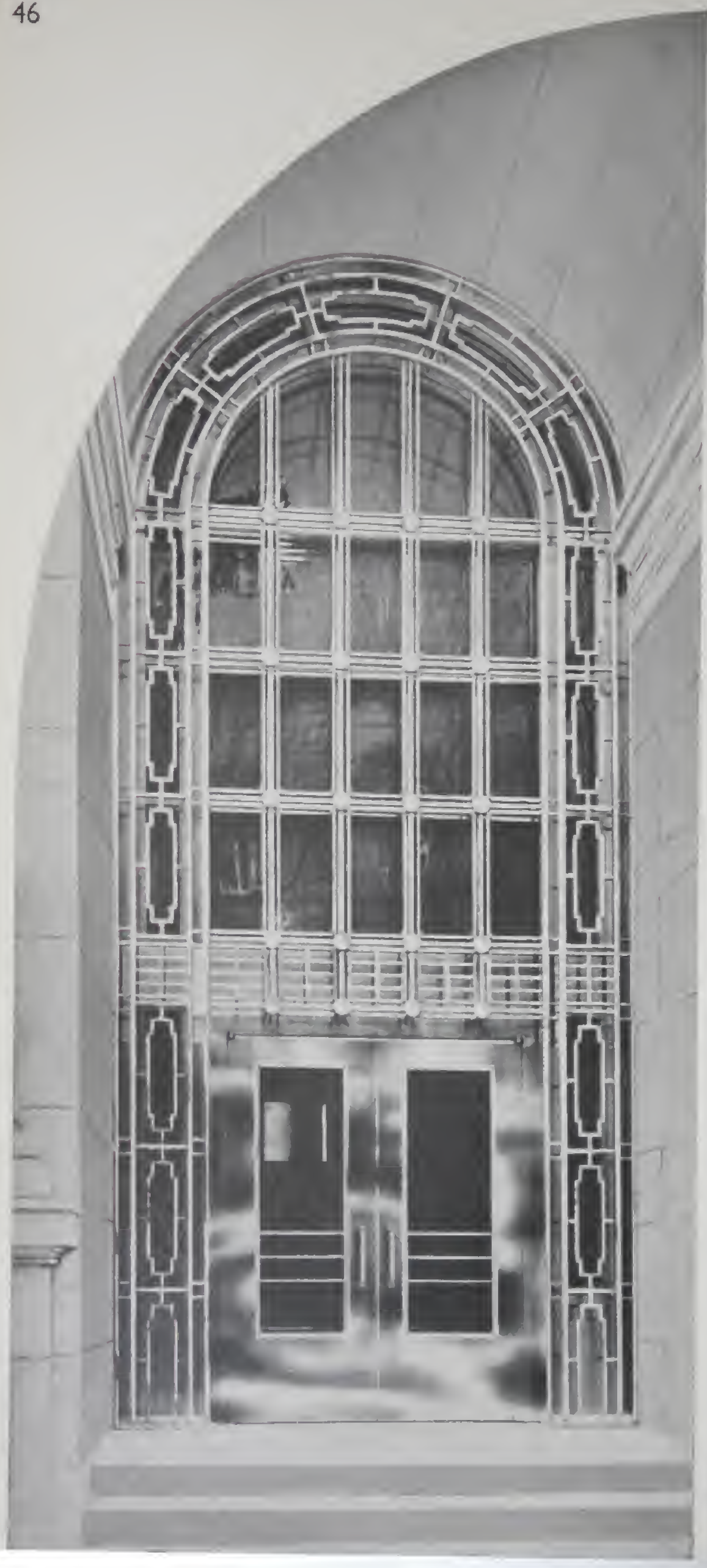


Bathroom details in "Stayfast" Steel.


Milk Bar,
Designed and executed by L. D. [illegible]

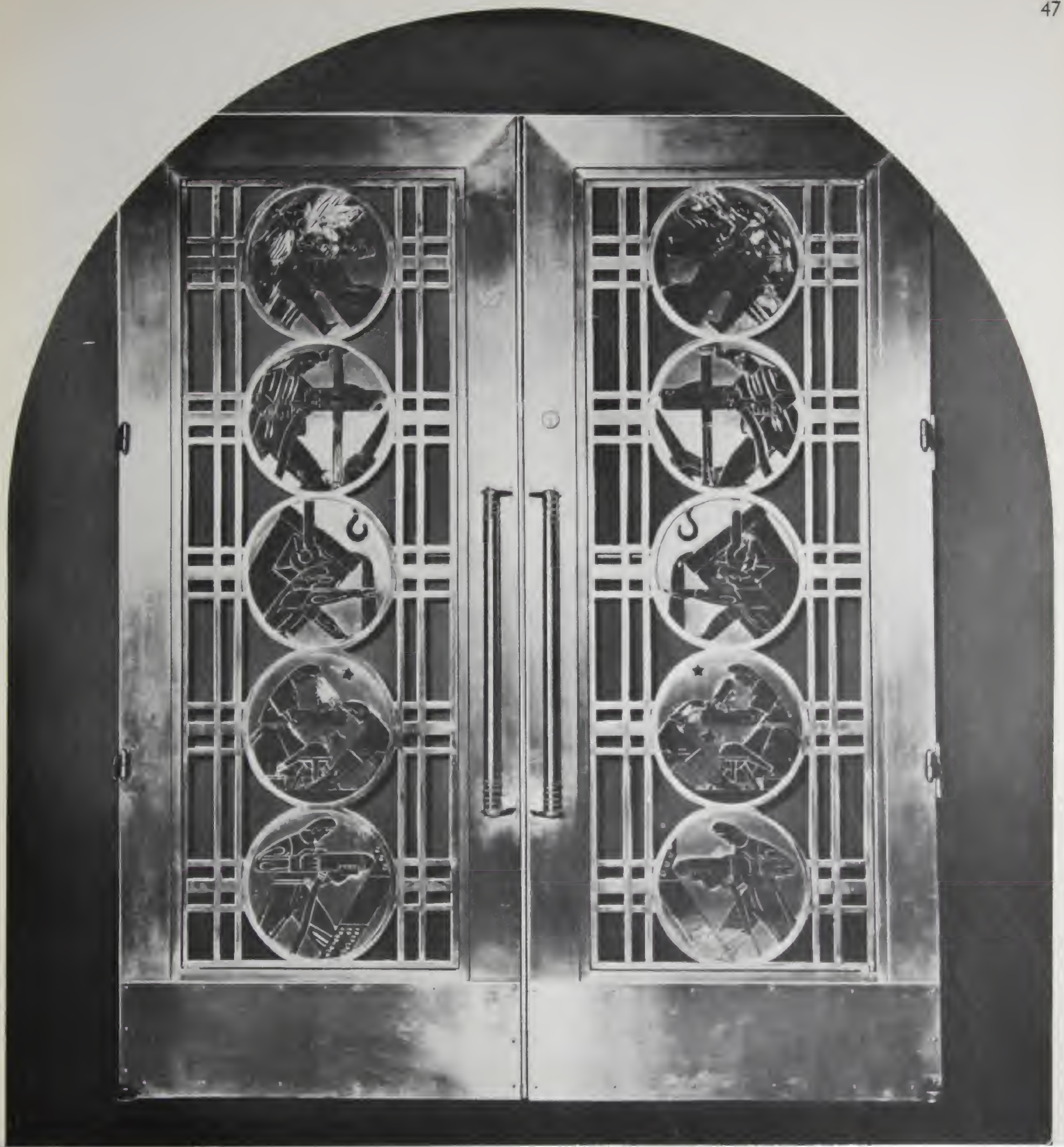

FAREX
OSTERMILK

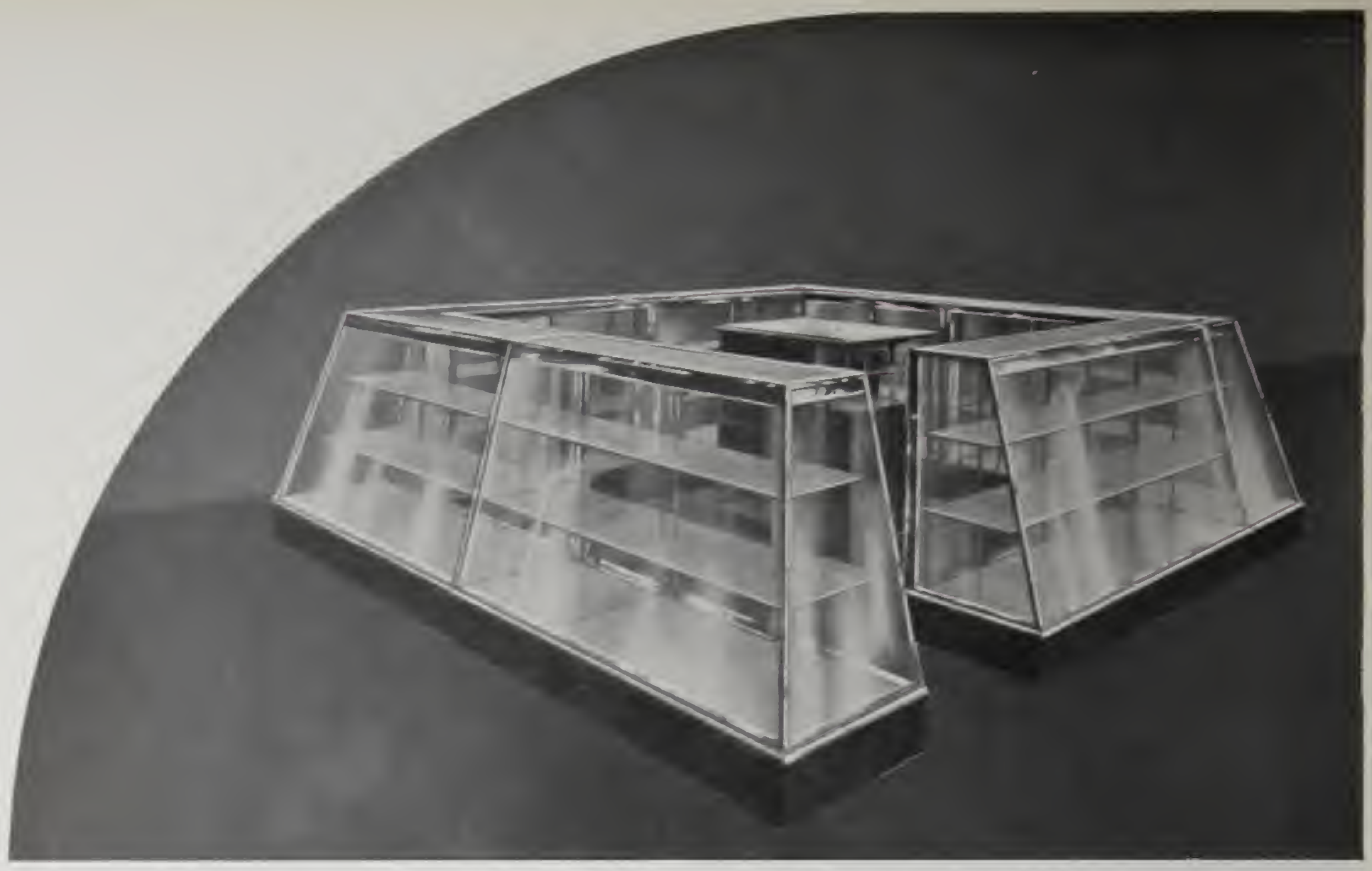
Gates at the Royal Academy
Designed by Alan Gomme
Craftsmen: Bromsgrove Guild

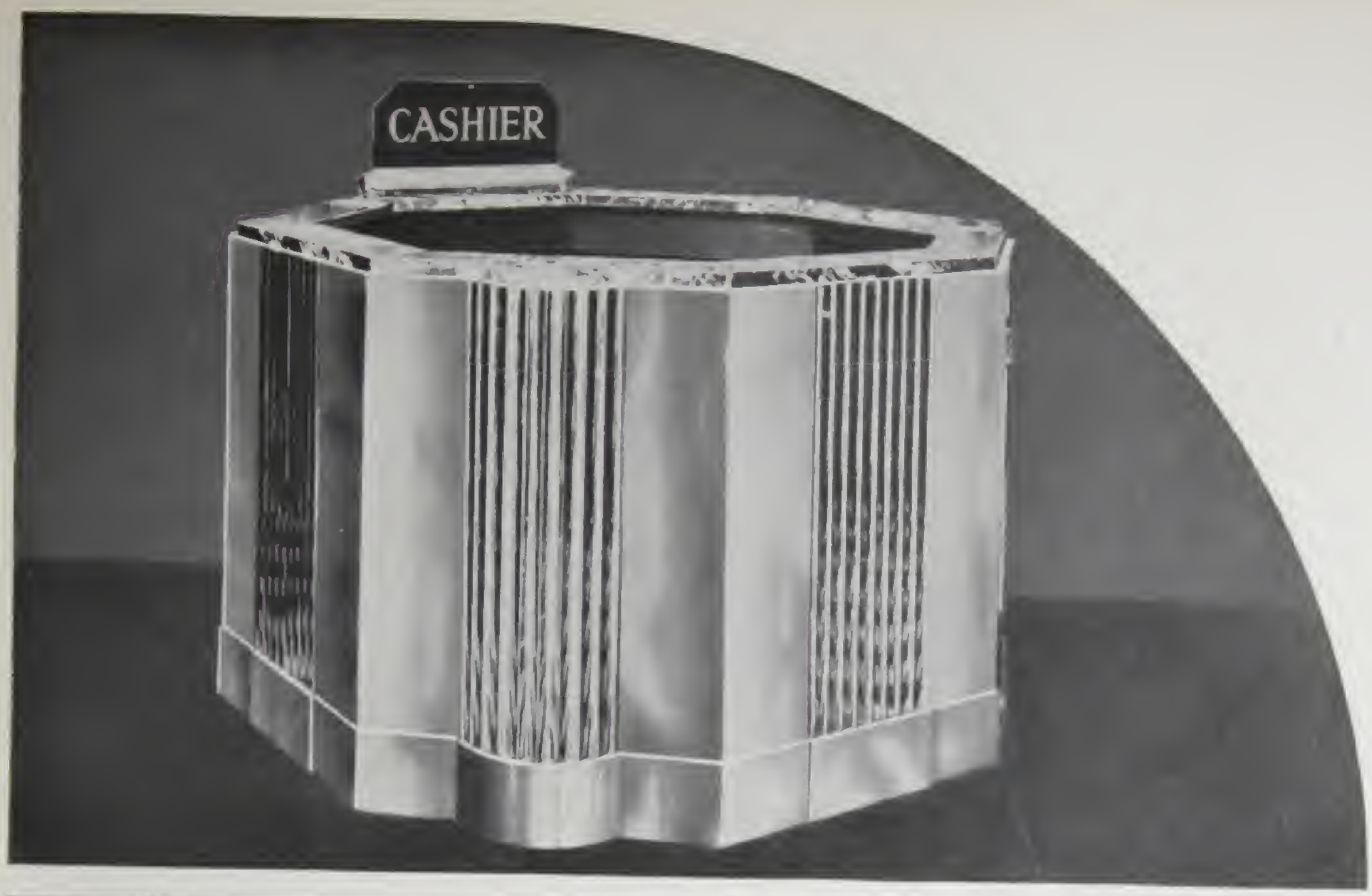


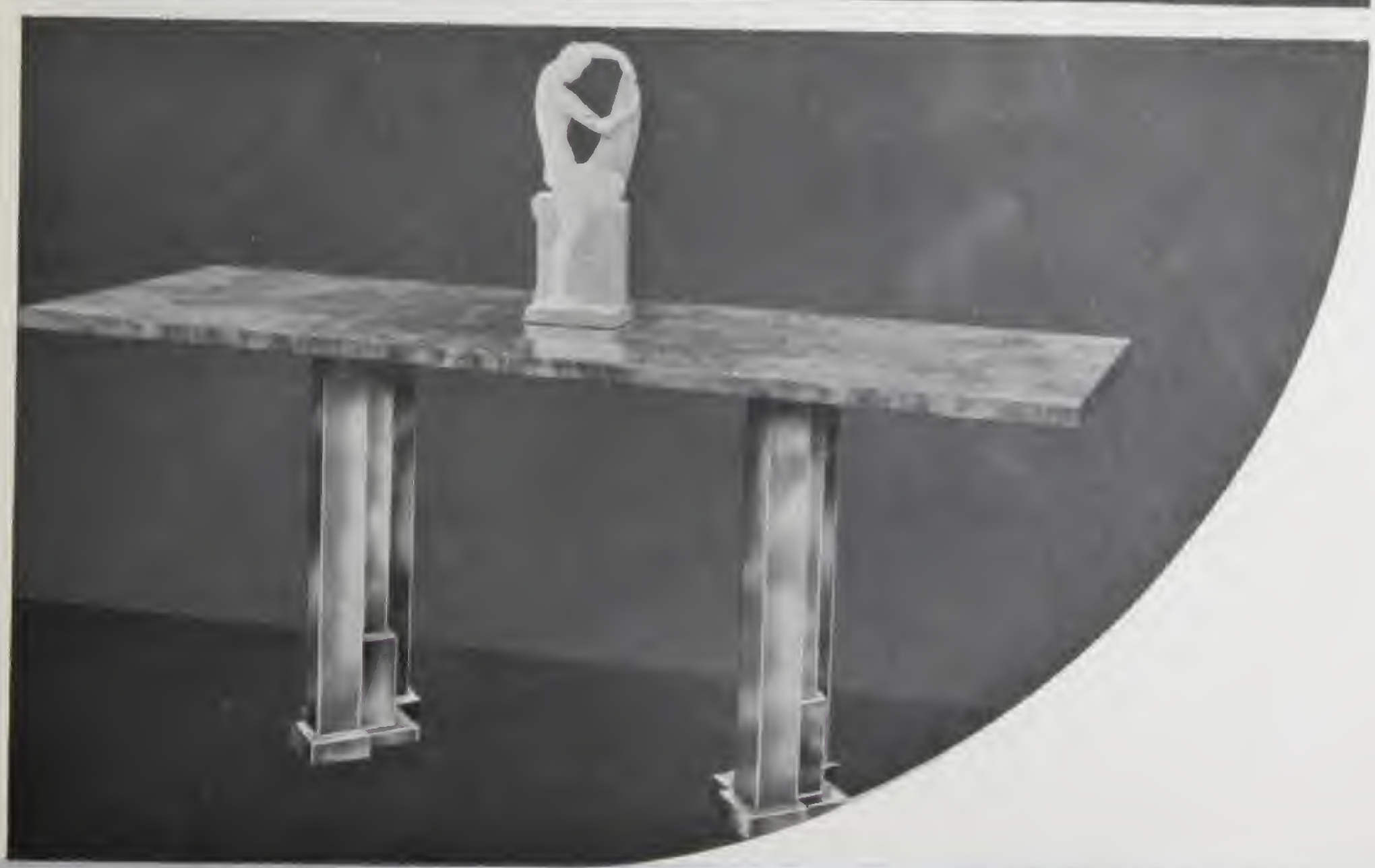
Doors, Parliament Buildings, Quebec.
Architects: Lochner and Dixon
In association with J. E. [illegible]
Craftsmen: Mr. Charles Marcil

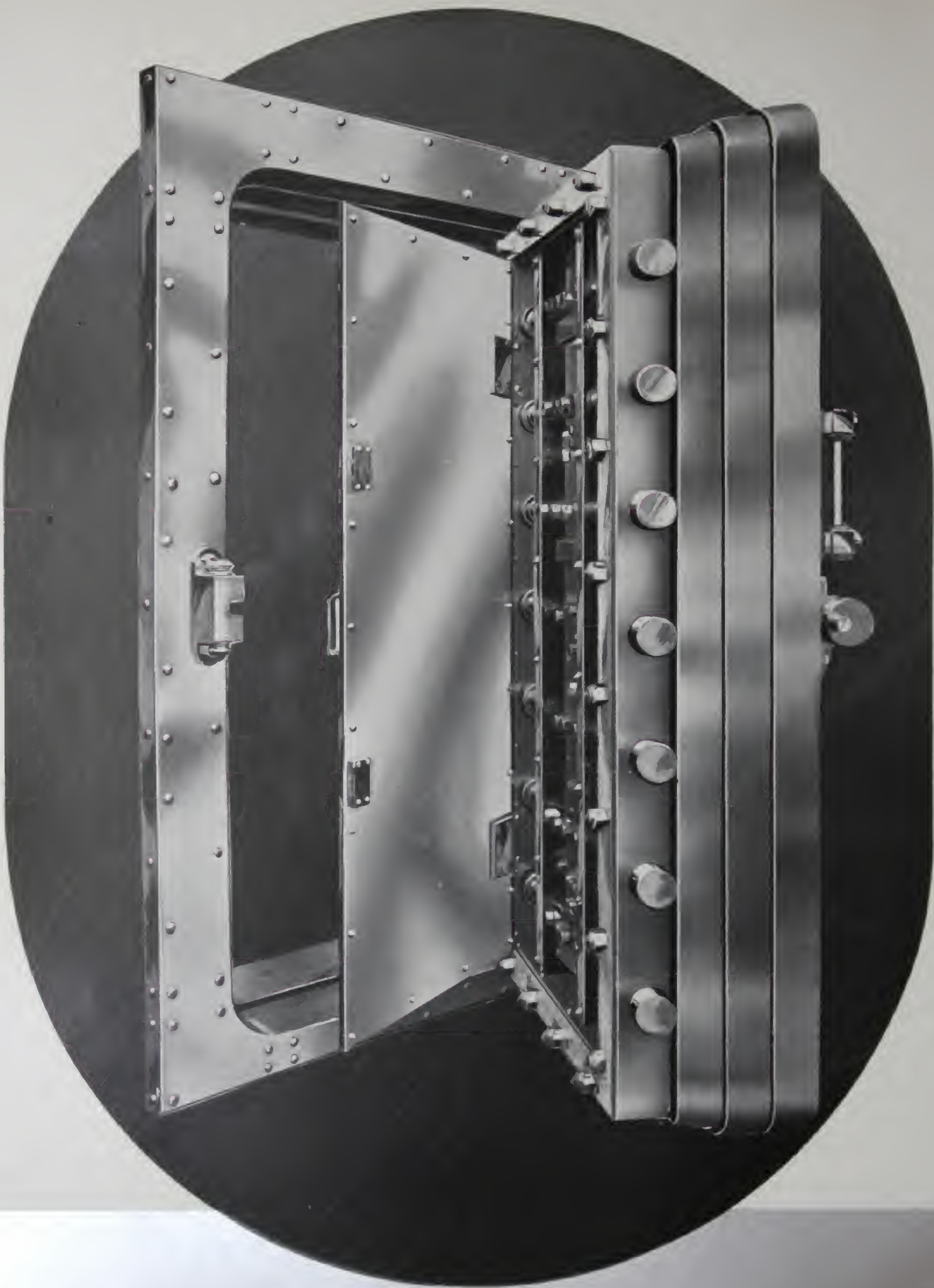
Entrance Doors, Standard Bank S.A. Ltd.
Room Heavy
Craftsmen: E. Sing & [illegible]






CASHIER





Strong Room Door
Designed and made by
Milners Safes Ltd. U.K.


12
1
2
3
4
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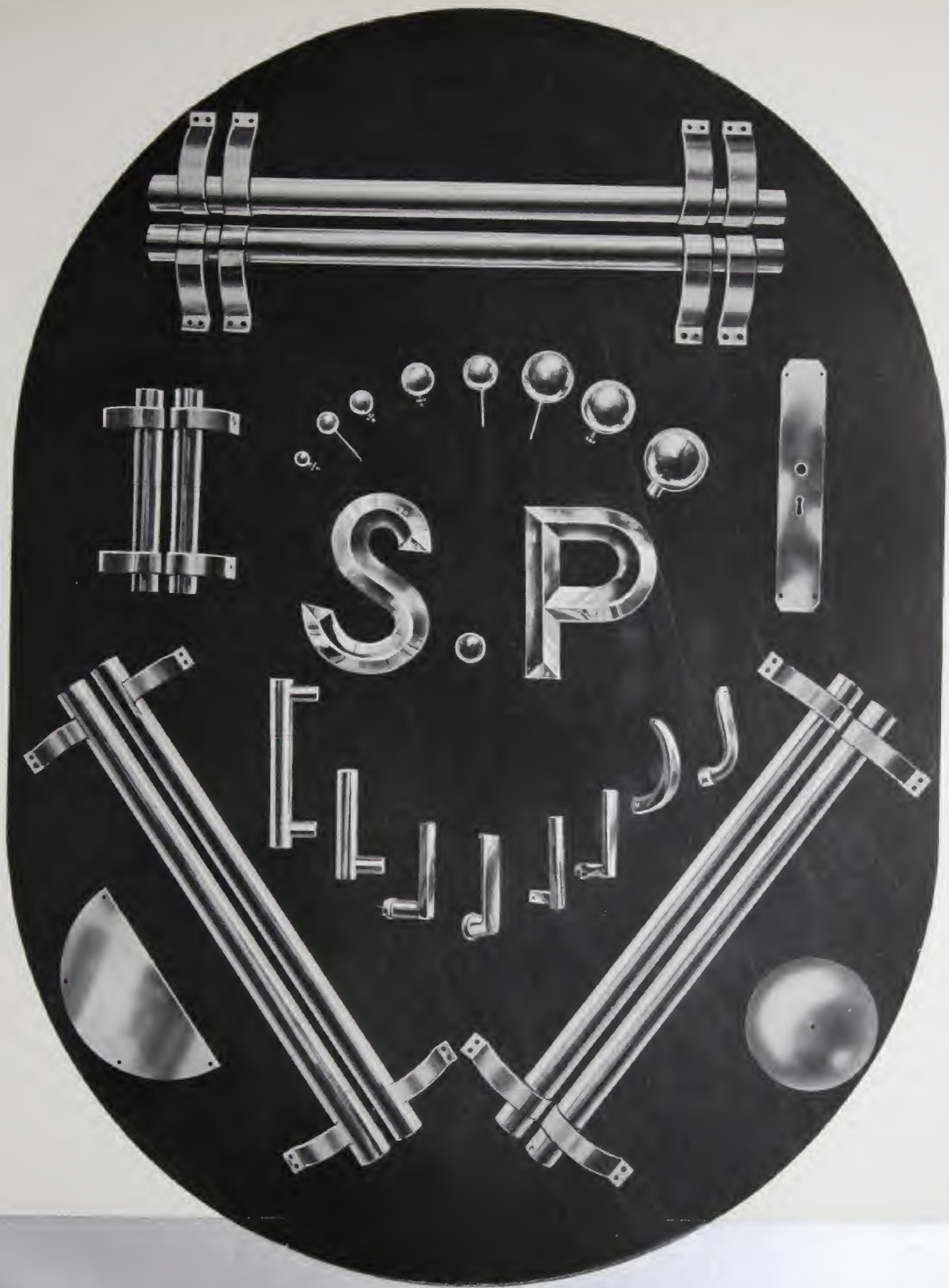
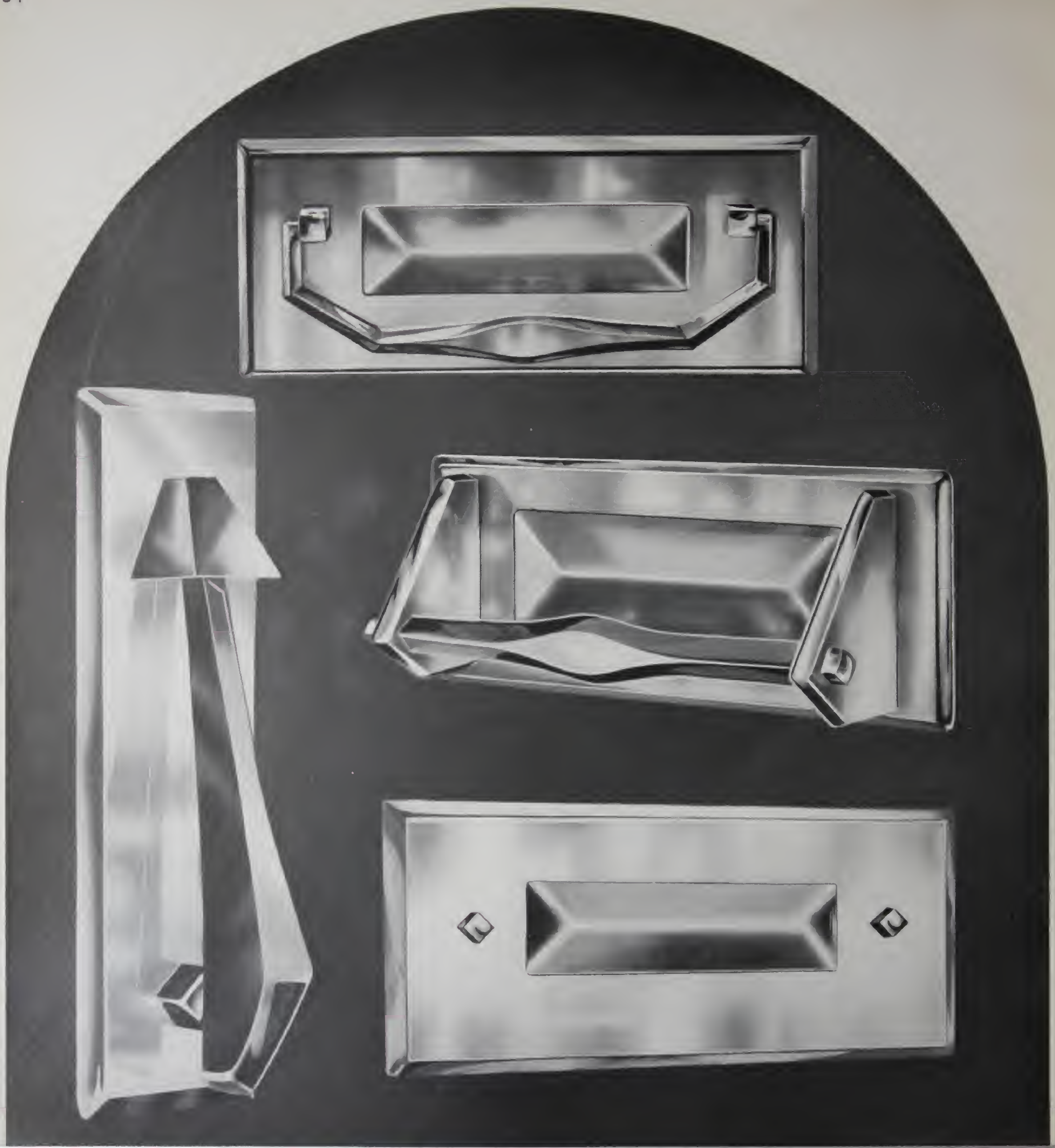
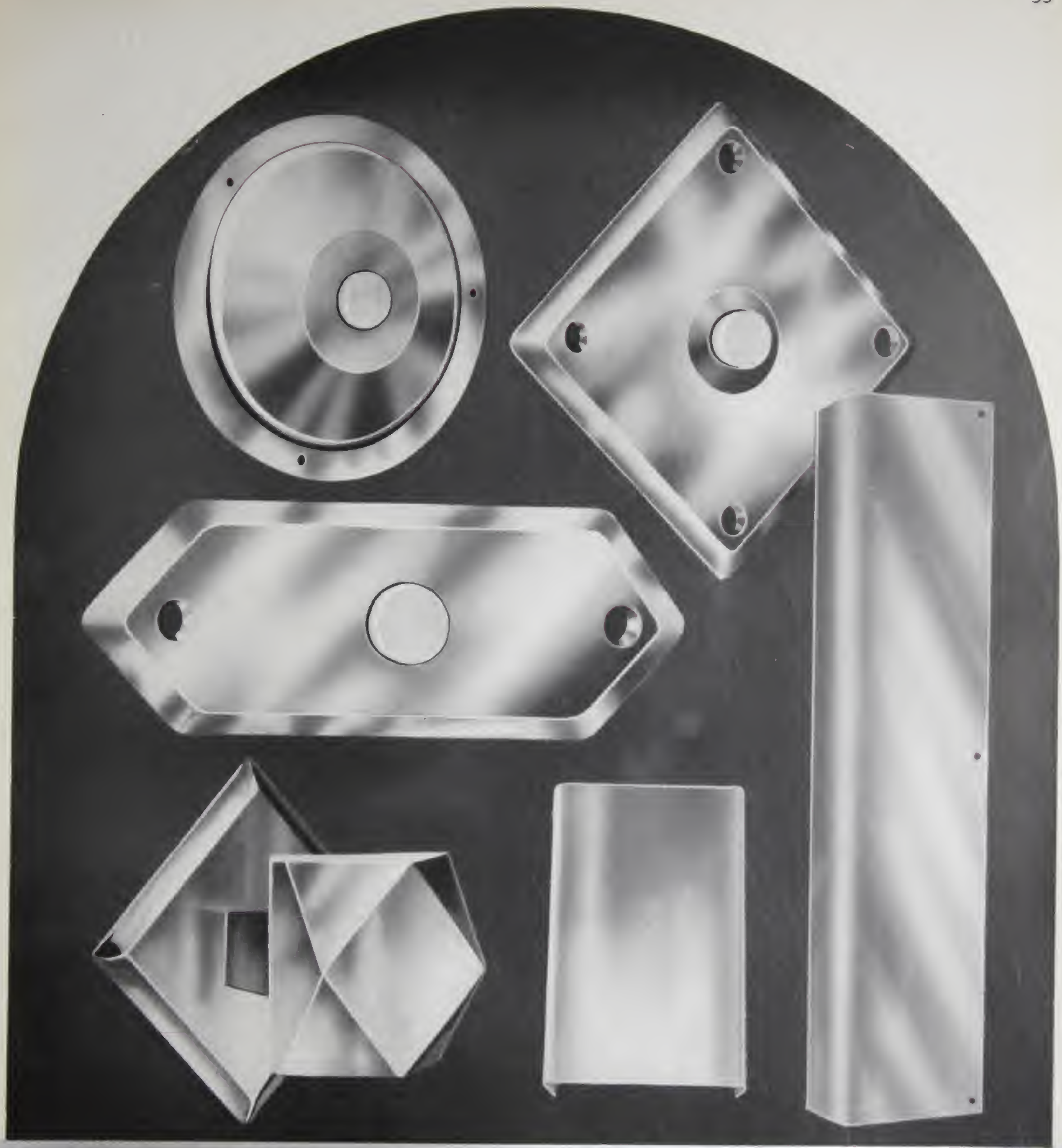
6
7
8
9
10
11


Details in Drawing Card


S.P



Door Furniture, etc., in "Stainless" Steel



Some of the 3,000 [illegible]
in drawing. Stack [illegible]
wood [illegible]

# "STAYBRITE" STEEL BARS FOR REINFORCEMENT

The present-day trend of building construction is all in the direction of concrete, reinforced where necessary by steel in the form of rods, the latter being used in particular to relieve the concrete of all tension where this exists, but being equally suitable under certain circumstances for taking part of the compression. We in these islands have been much slower in adopting this form of construction than in other countries, but it has such manifest advantages, both in flexibility and adaptability to all architectural designs, in speed in construction, not to speak of durability and smaller maintenance costs, that its increase in use to a still greater extent is but a matter of time.

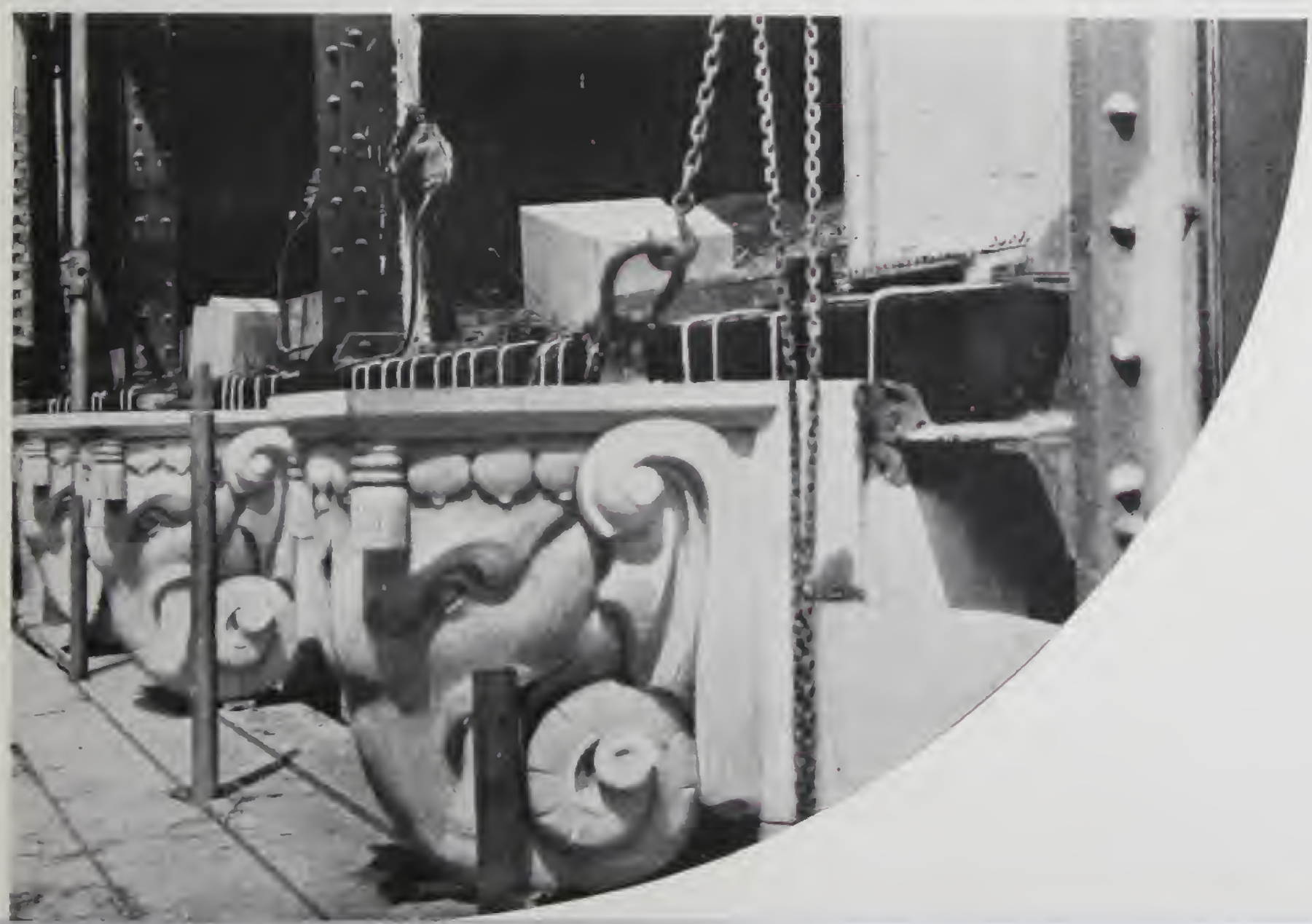
The use of concrete reinforced with steel bars is being extended also with every success to the preservation and strengthening of existing structures, especially where these consist of rubble masonry, the rods being inserted in holes drilled for the purpose, and then grouted in position with cement.

The apparent advantage of such a system of construction is that the steel, being embedded in concrete and completely covered with a coating of cement, is not subject to rust. Experiments have gone to show that with good workmanship this may be achieved initially, but since hair-cracks always develop in the concrete covering of the steel where tension exists, there is always danger of moisture reaching the steel so exposed, and in course of time causing a failure to the structure at the weakened point.

It is clear, then, that for all important or unduly exposed structures where a long life is required, especially those subject to heavy vibratory stresses, the only real assurance of permanence is to use a non-corrodible steel.

We might add that the tendency is for modern traffic to set up ever-increasing vibrations in all structures nearby, the evil effect of which is continually being demonstrated in ordinary buildings; and the


DI3



possibility of this vibration causing cracks in the concrete and exposing the reinforcement to atmospheric corrosion, cannot be ignored.

It is a well-known fact that all masonry is permeable to the passage of water in varying degrees. To use ordinary steel for buildings made to last is, therefore, to gamble on an uncertainty.

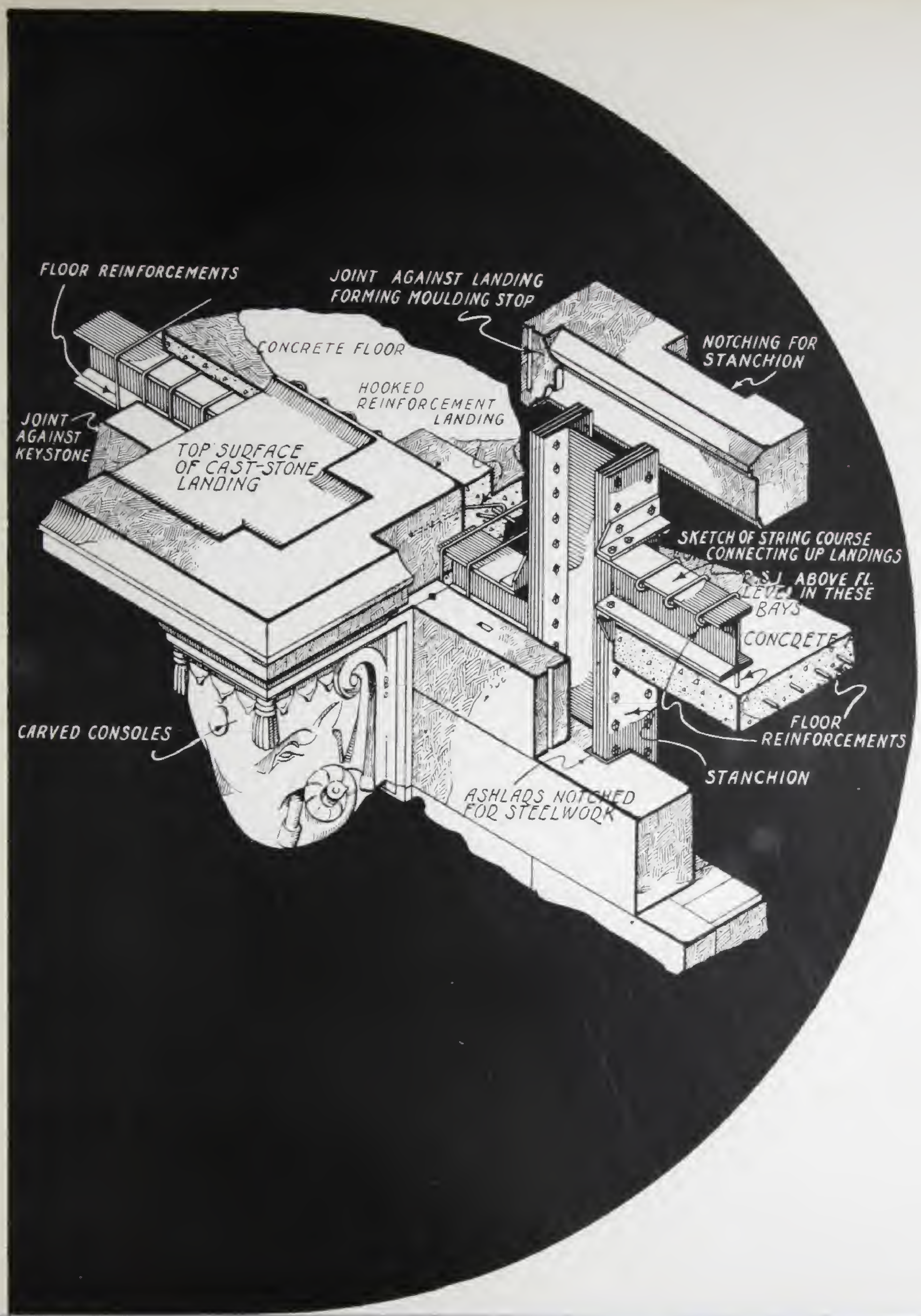
There is, therefore, a very good case for the employment of non-corrosive steel in all structures where the extra cost is justified.

The preservation work in St. Paul's Cathedral is an illuminating example, and more than 120 tons of "Staybrite" steel bars were used to reinforce the bases of the eight piers which support the huge Cathedral dome; the bars being inserted into the cement grouting which was forced under pressure into the loose filling of the piers. "Staybrite" steel tie-rods were also used for tying up the inner wall of the dome to the outer wall, and were secured by cast "Staybrite" steel washers and nuts.

It is true that adhesion (as known with ordinary steel) is very small indeed in the case of "Staybrite" steel, due, of course, to its non-rustless surface; but by using various types of indented or deformed bars, an excellent degree of resistance to movement is achieved.

Many tests have been carried out at the National Physical Laboratory in connection with the St. Paul's preservation work; and it was ascertained that an oval and indented type of bar, such as is shown on page 63, gives the best results.

A plain and uniform "Staybrite" steel bar of approximately $1\frac{1}{8}$ inches square, embedded for a length of 20 inches, was withdrawn by means of a pull of 2.88 tons, whereas the oval indented type of similar cross-sectional area required 18.88 tons. That is to say the adhesion between concrete and "Staybrite" steel is of the same order as the yield point of ordinary steel; and the reinforced structure is, therefore, just as strong.


FLOOR REINFORCEMENTS
JOINT AGAINST LANDING FORMING MOULDING STOP
CONCRETE FLOOR
NOTCHING FOR STANCHION
HOOKED REINFORCEMENT LANDING
JOINT AGAINST KEYSTONE
TOP SURFACE OF CAST-STONE LANDING
SKETCH OF STRING COURSE CONNECTING UP LANDINGS
ABOVE FL. LEVEL IN THESE BAYS
CONCRETE
FLOOR REINFORCEMENTS
CARVED CONSOLES
STANCHION
ASHLARS NOTCHED FOR STEELWORK

The yield strength in tension of "Staybrite" steel in the fully softened condition is actually about 17 tons per square inch, giving a working stress of at least 14,000 lb. per square inch, which compares favourably with the usual 16,000 lb. per square inch allowed for ordinary mild steel rods; although in the higher tensile condition this can be increased by 50 per cent., making a working stress of 21,000 lb. per square inch.

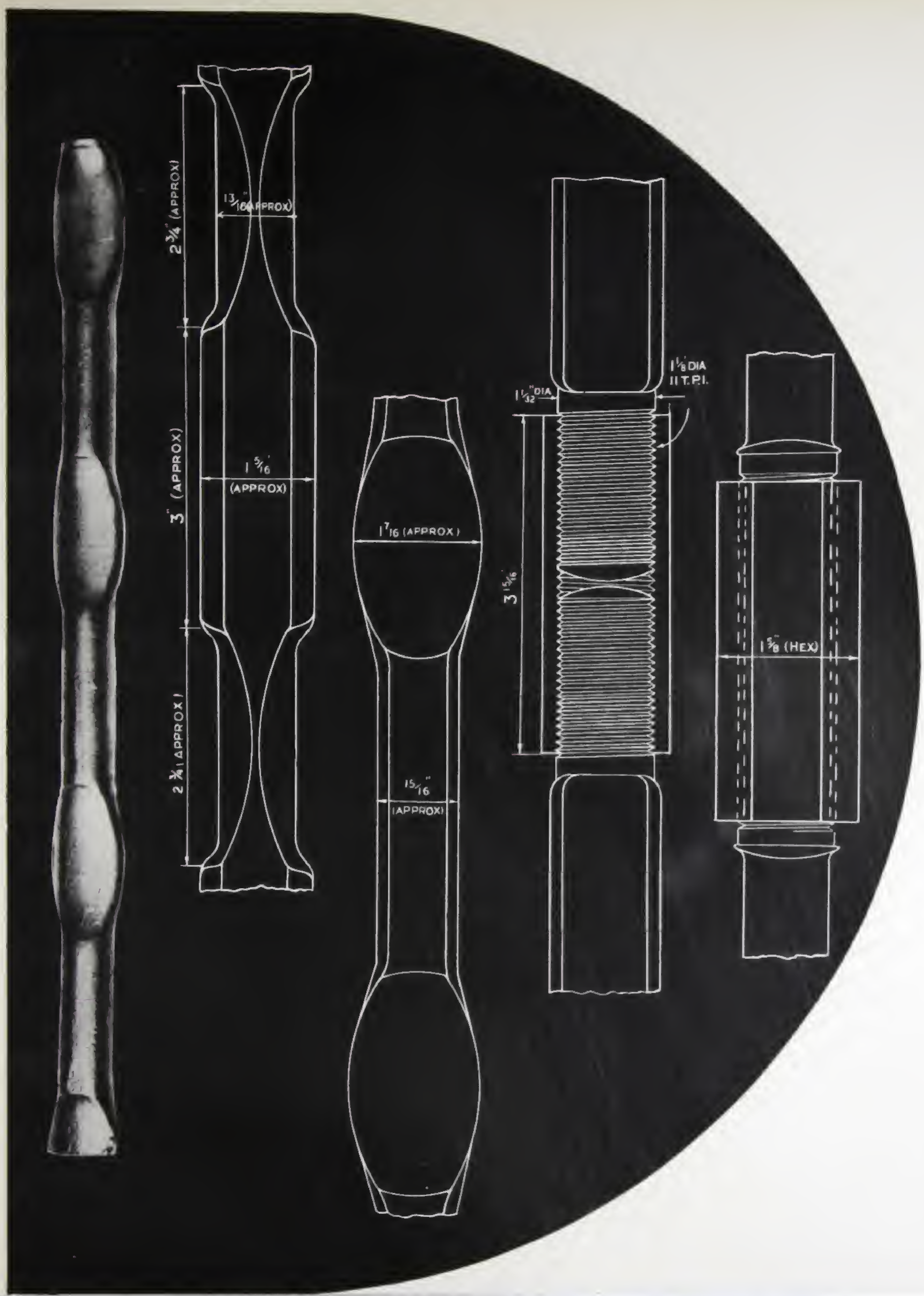
It appears to be desirable to give it slightly greater depth of cover at the underside of beams than that requisite for ordinary steel rods.

When used in compression, steel cannot be strained to a greater extent over any length than the concrete itself. Whence it follows that

$$\frac{\text{Stress in steel}}{\text{Stress in concrete}} = \frac{E_s}{E_c}$$

where $E_s$ and $E_c$ are Young's Modulus for steel and concrete respectively.

The value of E for "Staybrite" steel is within 10 per cent. of the value for ordinary mild steel, so that the conditions of use when under compression are closely similar for the two metals.


2¾" (APPROX)
13/16" (APPROX)
3" (APPROX)
1 5/16" (APPROX)
2¾ (APPROX)
1 7/16 (APPROX)
15/16" (APPROX)
1 1/32" DIA
1⅛ DIA
11 T.P.I.
3 15/16"
1⅝" (HEX)

# ADVICE TO AND SHOPFITTERS ON "STAYBRITE" STEEL WHEN

The rust- and stain-resisting properties of "Staybrite" steel have long been established beyond doubt (the shop-front of Messrs. Moyses Stevens Ltd., in Victoria Street, London, erected ten years ago, is, amongst many, a case in point), but the preservation of the aesthetic appearance is a matter which merits a few comments to those who may be unfamiliar with the practical application of "Staybrite" steel. "Staybrite" steel is well known to resist many corroding conditions which impair ordinary and even so-called rustless steels, and for that matter, other metals at present employed for decorative effect. Such resistance does not, however, prevent "Staybrite" steel from becoming dusty, dirty, or besmirched through exposure to the common conditions of architectural and commercial applications, especially out of doors in cities or industrial neighbourhoods. The behaviour of "Staybrite" steel surfaces under these conditions (and where they are relied upon for their aesthetic effect) is governed by design, locality of application, and method of maintenance.

The design should be such as to do justice to the steel in relation to the technique of fabrication into its final form. It may be said that the ductile characteristics of many non-ferrous materials have encouraged their excessive manipulation and practical abuse. The comparative strength of "Staybrite," as a steel, protects it from extravagant manipulation, but the high and varying degrees of permanently polished surface which are obtainable in this steel form a characteristic which merits

# ARCHITECTS
# THE MAINTENANCE OF
# USED FOR AESTHETIC EFFECT

discrimination in design. Designers and metal-workers are well aware that the more highly burnished a metal may be, the more conspicuous the blemish of dirt. It is, therefore, desirable that polished "Staybrite" steel surfaces should be kept in as spotless a condition as possible. Furthermore, the atmosphere of towns is contaminated by the products of combustion of coal, one of which is sulphur dioxide resulting from the oxidation of the sulphur in the coal. The gas will dissolve in rain to form sulphurous acid, and further oxidation by the atmosphere may even produce sulphuric acid. The rain will also bring down with it particles of soot and other solid matter, which on drying out will leave residues on the metal surface which should certainly be removed at frequent intervals. The surface of the steel should clearly be kept as clean as possible. To preserve such a condition and to facilitate the process of its maintenance by wiping and washing, "Staybrite" steel decoration should be free from details containing pockets and angles, fine corrugations, and other crevices which may readily accommodate dust and dirt unless scrupulous maintenance is assured. Ill-considered details in this respect merely prolong the labour of cleansing, and in actual practice may lead to neglect and consequent disappointment regarding the appearance.

Locality of application is the second matter for consideration, and is sometimes overlooked by those who are over-keen and apply "Staybrite" steel for decoration under unfavourable conditions. Interior and exterior decorations which create

the architectural sensation of polished silver are often very attractive, but it must be appreciated that excessive application of any polished metal to the exterior surface of buildings in a town atmosphere is an unusually severe test in the matter of design and maintenance. "Staybrite" steel is easily cleaned, but cleaning must be commensurate with local conditions. Thus, in an exceptionally dirty locality, in the presence of considerable smoke, soot, and fumes, it is necessary to clean the steel more often than under less severe conditions, and accessibility for cleaning becomes of very great importance.

The cleansing that is actually required to preserve the appearance of "Staybrite" steel surfaces is, however, quite simple.

## THE CLEANSING OF "STAYBRITE" STEEL

Simply wipe over the surface with a damp cloth or leather, using a little soap and warm water if necessary. A scrubbing brush is useful for reaching corners and crevices. The steel should be dried and polished with a soft, dry cloth or leather. Coarse fabrics, grit, and metal polish should be avoided, as liable to scratch the polished surfaces.

The design of architectural details in "Staybrite" steel should be such as lends itself readily to cleansing, and all crevices and angles likely to act as lodgments for dirt should be avoided, but where such things as ornamental castings or awkward corners exist, so that proper cleansing by the above method at sufficiently frequent intervals is difficult or impossible, details of an effective special treatment for cleansing will gladly be sent by our technical department upon request.

# FORMS IN WHICH "STAYBRITE" STEEL MAY BE OBTAINED

## SHEETS

"Staybrite" steel sheets are supplied by Firth-Vickers Stainless Steels Limited in a number of different finishes, that of principal interest to architects and others using "Staybrite" steel for decorative purposes being the polished condition.

Polished "Staybrite" steel sheets are supplied as follows :—

**No. 1.**—DULL polish on ONE SIDE only.

**No. 2.**—BRIGHT polish on ONE SIDE only.

**No. 3.**—DULL polish on BOTH SIDES.

**No. 4.**—BRIGHT polish on ONE SIDE, DULL polish on the OTHER.

**No. 5.**—BRIGHT polish on BOTH SIDES.

Samples of the DULL and BRIGHT polished finishes may be obtained from us upon request.

"Staybrite" steel sheets are also finished by specialist fabricators with certain decorative finishes such as hammered and engraved. We shall be pleased to furnish the names of these fabricators upon request.

## STRIP

Polished "Staybrite" steel strip, dull or bright polished as for sheet, is supplied by Firth-Vickers Stainless Steels Limited in thicknesses ranging from 10 gauge (0.128 inch) down to 40 gauge (0.0048 inch). Widths of 8 inches, 9 inches, and 10 inches are standard, narrower strips being slit to size. Lengths up to 15 feet are supplied flat, and longer lengths in coil up to maximum lengths as follows :—

10 gauge (0.128 inch) to 13 gauge (0.092 inch, 50 to 60 ft.

14 gauge (0.080 inch) to 16 gauge (0.064 inch), 80 to 100 ft.

17 gauge (0.056 inch) to 22 gauge (0.028 inch), 100 to 160 ft.

23 gauge (0.024 inch) to 40 gauge (0.0048 inch), up to 200 ft.

# Maximum Sizes of
# POLISHED "STAYBRITE" STEEL SHEETS

## ENGLISH

| THICKNESS. | | LENGTH IN FEET FOR WIDTHS. | | |
|---|---|---|---|---|
| S.W.G. | Inches. | Up to 2 ft. | From 2 ft. to 3 ft. | From 3 ft. to 4 ft. |
| 8 | .160 | 10 | 9 | 8 |
| 9 | .144 | 10 | 10 | 9 |
| 10 | .128 | 10 | 10 | 10 |
| 11 | .116 | 10 | 10 | 10 |
| 12 | .104 | 10 | 10 | 10 |
| 13 | .092 | 10 | 10 | 10 |
| 14 | .080 | 10 | 10 | 10 |
| 15 | .072 | 10 | 10 | 10 |
| 16 | .064 | 10 | 10 | 10 |
| 17 | .056 | 10 | 10 | 10 |
| 18 | .048 | 10 | 10 | 10 |
| 19 | .040 | 10 | 10 | 10 |
| 20 | .036 | 10 | 10 | 10 |
| 21 | .032 | 10 | 10 | 10 |
| 22 | .028 | 10 | 10 | 10 |
| 23 | .024 | 10 | 10 | 8 |
| 24 | .022 | 10 | 10 | 8 |
| 25 | .020 | 10 | 10 | 8 |
| 26 | .018 | 10 | 8 | 6 |

## METRIC

| THICKNESS. | LENGTHS IN M/MS. FOR WIDTHS UP TO | | | |
|---|---|---|---|---|
| m/ms. | 610 m/ms. | 750 m/ms. | 1000 m/ms. | 1200 m/ms. |
| 4.0 | 3000 | 3000 | 3000 | 3000 |
| 3.5 | 3000 | 3000 | 3000 | 3000 |
| 3.25 | 3000 | 3000 | 3000 | 3000 |
| 3.0 | 3000 | 3000 | 3000 | 3000 |
| 2.75 | 3000 | 3000 | 3000 | 3000 |
| 2.25 | 3000 | 3000 | 3000 | 3000 |
| 2.0 | 3000 | 3000 | 3000 | 3000 |
| 1.75 | 3000 | 3000 | 3000 | 3000 |
| 1.5 | 3000 | 3000 | 3000 | 3000 |
| 1.25 | 3000 | 3000 | 3000 | 3000 |
| 1.0 | 3000 | 3000 | 3000 | 3000 |
| .9 | 3000 | 3000 | 3000 | 3000 |
| .8 | 3000 | 3000 | 3000 | 3000 |
| .7 | 3000 | 3000 | 3000 | 3000 |
| .6 | 3000 | 3000 | 2500 | 2500 |
| .5 | 3000 | 3000 | 2500 | 2500 |
| .45 | 3000 | 2500 | 2000 | — |

# SECTIONS DRAWN ON WOOD AND LEAD-FILLED FILLETS

A great number of different sections drawn on to a hardwood backing, a few of which are illustrated on pages 56 and 57, are obtainable in "Staybrite" steel. Lead-filled fillets of all usual sections are also produced from "Staybrite" steel by specialist manufacturers.

Architects, shopfitters, and others who wish to obtain details of these sections should write to us and we shall be pleased to put them into direct touch with those fabricators who are able to satisfy their requirements.

# DRAWN AND ROLLED SECTIONS

Open sections constructed from "Staybrite" steel are also being freely used in certain branches of architectural and decorative work, and are particularly useful for window framing and beading. We shall be pleased to furnish the names of fabricators of these sections upon request.

# TUBES

Solid drawn and welded "Staybrite" steel tubes are normally produced by the tube manufacturers in sizes from a fraction of an inch up to four inches diameter, all the usual sections : circular, oval, flat-sided oval, square, rectangular, streamline, as well as special balustrading and handrail sections being obtainable. The tube manufacturers also possess facilities for bending, bulging, stepping-down, welding and other manipulative processes, and are able to produce completed tubular structures if required.

# CASTINGS

"Staybrite" steel is now being used for all types of architectural and decorative fittings such as those illustrated on pages 52 to 55 (inclusive). A great number of different designs are already in standard production, and we shall be pleased to furnish the names of manufacturers upon request. Details specially designed by architects may be produced either from drawings or from patterns, whilst suitable designs in other materials may be reproduced in "Staybrite" steel. All such enquiries should be addressed to us.

# BARS

Standard stock lengths of solid "Staybrite" steel bars are 10 to 14 feet, although we supply longer lengths, and larger sizes than those listed below, to order.

Standard sizes are as follows :—

ROUNDS.—$\frac{3}{16}$-inch to $5\frac{1}{2}$ inches diameter.

SQUARES.—$\frac{3}{16}$-inch to $3\frac{1}{4}$ inches square.

FLATS.—From $\frac{1}{4}$-inch $\times$ $\frac{1}{8}$-inch up to 5 inches $\times$ $\frac{3}{8}$-inch.

HEXAGONS.—$\frac{1}{4}$-inch to $2\frac{1}{8}$ inches across the flats.

OCTAGONS.—$\frac{3}{16}$-inch to $1\frac{3}{8}$ inches across the flats.

HALF ROUNDS.—From $\frac{1}{4}$-inch $\times$ $\frac{1}{8}$-inch, advancing by $\frac{1}{32}$-inch up to 1-inch $\times$ $\frac{1}{2}$-inch.

MOULDING SECTIONS.—In a great number of different sizes and sections.

The usual finish for bars is the descaled **matt** finish, but hexagons and flats may be supplied cold-rolled or **"planished,"** and round bars up to three inches diameter are available **"smooth ground."** Arrangements can also be made to supply any section either **dull** or **bright polished.**

# MISCELLANEOUS FIXINGS AND FITTINGS

Screws, nails, hooks, chains, wires, and the hundred and one other types of fastenings and fittings often required in finishing off a decorative treatment are manufactured from "Staybrite" steel by specialist fabricators.

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Nearly every detail normally manufactured in any metal is now produced from "Staybrite" steel by one or other of the many fabricators using this super-corrosion-resisting material. If you are at a loss to secure any detail to complete a scheme, write to us and we will tell you where it can be obtained. When putting enquiries directly through your normal channels of supply specify "Staybrite" steel. Always use "Staybrite" steel fastenings and fittings in a "Staybrite" steel decorative treatment to ensure that every detail down to the last screw may be of the same high quality.

**FIRTH-VICKERS STAINLESS STEELS LIMITED**

STAYBRITE WORKS, SHEFFIELD

Telephone 41193 (6 lines). Telegrams : "Staybrite" Sheffield